Island biogeography meets the Anthropocene

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This Issue

Photo credit: Rostislav Stach

Welcome to BioNews

BioNews is a monthly newsletter featuring recent biodiversity research and monitoring on and around the six islands of the Dutch Caribbean. BioNews also provides an overview of recent publications, current research and monitoring activities, and upcoming events.

For any questions or feedback, or if you would like to make a contribution, please contact us at research@DCNAnature.org

Editor's Notes

This first issue of 2016 puts the spotlight on how the biodiversity of our islands is adapting to mounting environmental pressures, both internal and external.

We first present some exciting preliminary results from the third Saba Bank Research Expedition, which was conducted in October 2015 by a team of experts from IMARES and several other institutes. The expedition was the third and last of the Saba Bank Research Program and focused on how the Saba Bank's rich biodiversity is being affected by ocean acidification. We look forward to bringing you more results and findings from this research program in our next Bio New issues!

Next we profile a NWO and KNAW funded project from the Netherlands, "*Biogeography meets the Anthropocene*". This study was recently launched to investigate how invasive species and land-use changes affect the species communities of the Dutch Caribbean Islands. The first field expedition took place in the summer of 2015 and focused on reptiles and amphibians. Keep an eye out for information on other recently launched NWO funded projects in coming issues of our newsletter.

Also in this issue are details about the first ever sighting of a pied water tyrant within the Kingdom of the Netherlands as well as the outcomes of the 12th meeting of the Scientific Committee of the Inter-American Sea Turtle Convention (IAC).

Enjoy!

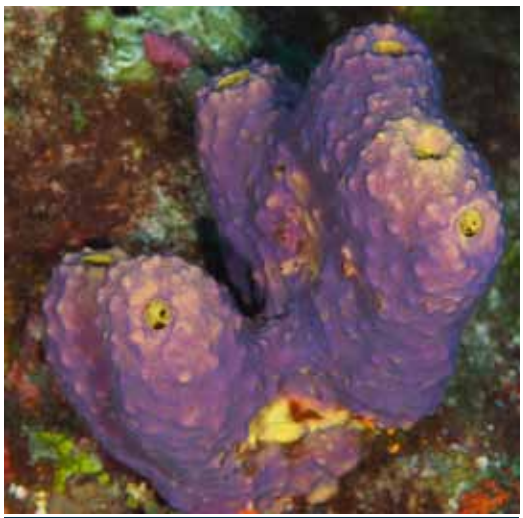
- DCNA team

Oct. 2015: Third Saba Bank expedition

A select group of researchers from IMARES and several other institutions* came together from October 17th to October 31st 2015 to conduct the third expedition to the Saba Bank under the Saba Bank Research Program.

From the comfort of the live aboard "Caribbean Explorer II", three different teams set out to gather data on distinctive aspects of the Bank's extensive coral reefs: the coral and sponge community (benthos team), fish assemblage and biomass (fish team), as well as chemical dynamics and reef productivity (NIOZ team). All teams, however, had one common goal: assess how a relatively pristine ecosystem such as the Saba Bank is changing under mounting global environmental pressures, notably climate change and resulting ocean acidification.

Continued on page 2 >>



Sponges are vital components of reef systems
Photo credit: Oscar Bos

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Continued: Oct. 2015: Third Saba Bank expedition

A mesocosm ('underwater tent') to test whether the reef grows or erodes.
Photo credit: Erik Meesters

Partly bleached coral (Porites astreoides).
Photo credit: Erik Meesters

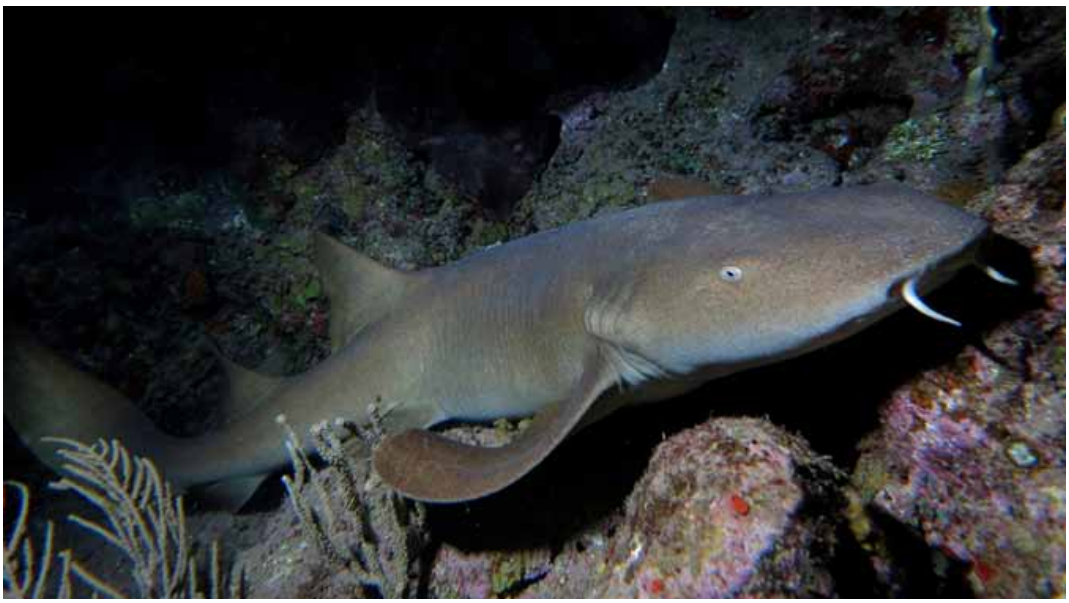
"*Ongoing ocean acidification causes major shifts in species composition, which results in a shift in the reef's growth/erosion balance*," explains Alice Webb (NIOZ). A healthy reef is dependent on the delicate dynamic between its primary builders, hard corals, and its primary bio-eroding agents, notably chemical bio-eroders such as sponges. Recent studies have demonstrated that ocean acidification not only weakens the calcium carbonate skeleton of coral but also increases sponge biomass and therefore the rate of reef erosion. The Bank already has a large population of sponges that "*might play a large role in the breakdown and dissolution of calcium carbonate*" (Fleur van Duyl, Royal Netherlands Institute for Sea Research). One main objective of this expedition was to determine the extent to which the Bank's reefs are becoming "sponge reefs" and therefore "*shifting towards net erosion instead of net growth*" explains Alice Webb.

A known biodiversity hotspot, the Saba Bank is of special interest to scientists because it has remained relatively pristine thanks to its distance from land and development. The Bank is acknowledged by the Convention of Biological Diversity (CBD) as an Ecological and Biological Significant Area and receives both national and international protection through its designation as a National Park in 2010 and its designation as Particularly Sensitive Sea Area in 2012.

As little research has been carried out in the area, the Dutch Ministry of Economic Affairs commissioned the Saba Bank Research Program to obtain information on the Bank's biodiversity and ecological functions, with the ultimate goal of facilitating the sustainable management of the area. The Saba Bank Research Program runs from January 1st 2011 to December 31st 2016. The first expedition was conducted in October 2011 and the second in October 2013.

The benthos team and the fish team of this third Saba Bank expedition carried out a number of surveys to investigate whether there have been changes in bottom cover by corals and other organisms, as well as changes in fish and sponge biomass since the first two Saba Bank expeditions. During the first week (benthos and fish surveys) everything went as planned and surveys were carried out at 10 locations on the Bank. To enable comparisons of data between all three expeditions, the same methodology was applied, that is the use of 50m long and 5 m wide transects. During the second week (chemical dynamics) due to a number of circumstances, including bad weather, it became impossible to carry out more than three dives on the Saba Bank, so the remaining nine dives were carried out at Ladder Bay, Saba.

Initial observations point to a healthy reef: coral diversity is high, with 18 stony coral species recorded at Saba Bank and 42 at Ladder Bay, the later being a very high number for a single locality in the Caribbean (Bert Hoeksema, Naturalis). Few bleached corals were also observed. Fish surveys revealed an abundance of large predators including groupers, jacks and barracudas, with noticeably more sharks present. "*There were strikingly more sharks on this expedition than previous ones… in nearly every dive spot were Caribbean reef sharks, nurse sharks and once a 3 meter long hammerhead shark*" (Ingrid van Beek (IMARES)).



Nurse shark (Ginglymostoma cirratum) during a night dive.
Photo credit: Ewan Trégarot

To test whether the Saba Bank's reefs are growing or eroding, a mesocosm was set up on the seafloor by the NIOZ team, which was headed by Janine Nauw, physical oceanographer at the Royal NIOZ. The team enclosed a small part of the reef in a tent and monitored the water chemistry inside accurately. To ensure minimum exchange between the inside and outside of the tent, a highly saline solution was added to the inside to ensure that salinity in and out of the tent was equal.

Despite some challenges, such as putting up the tent on a mostly mature reef with no sand and carrying samples and equipment up and down in less than ideal diving conditions, the NIOZ team successfully kept the tent up for three days, with plenty of nurse sharks eager to check out this new underwater campground. A CTD (Conductivity, Temperature, and Depth) was also used to measure salinity, temperature and depth throughout the water column. Because the vessel Caribbean Explorer II is a liveaboard and not a research vessel, members of the expedition had to be very resourceful, and makeshift labs were set up in the liveaboard's boutique.

In 2016 a symposium will be organized to present the results of the expeditions and research that has taken place on the Saba Bank. Results will be publicly available through the website of Wageningen University and the knowledge portal for the Caribbean Netherlands www.dcbd.nl.

More information: Blog: http://expeditiesababank.blogspot.nl/

Large predators were observed during fish surveys. Here Dahlia Hassell from SCF (SBMU) with a large tarpon (Megalopidae).
Photo credit: Erik Meesters

* IMARES: Erik Meesters (Project leader), Ingrid van Beek, Lisa Becking, Oscar Bos, Didier Bakker

NIOZ: Fleur van Duyl, Janine Nauw, Alice Webb, Steven van Heuven, Xuewu Liu

Naturalis Biodiversity Centre: Bert Hoeksema

SCF (SBMU): Dahlia Hassell, Kai Wulf

OMMM Martinique: Jean-Philippe Marechal, Ewan Trégarot

Deal Guadeloupe: Franck Mazeas

Gem City Consulting (LVV Statia): Steve Piontek

WNF: Ingvild Harkes, David Stevens

Nature Foundation Sint Maarten: Tadzio Bervoets

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Island biogeography meets the Anthropocene - The first expedition.

By Wendy Jesse (Vrije Universiteit Amsterdam, the Netherlands)

Many modern human activities result in environmental problems such as pollution, overfishing and deforestation, which have a considerable impact on our natural world. The biodiversity of tropical islands within the Caribbean Region is especially affected by land-use change and the introduction of exotic species. These human activities modify island biodiversity in two ways: introduced species (initially) increase overall biodiversity, while intensified land-use threatens native and endemic species with extinction. The resulting species community shifts, however, remain unknown. For this reason, the Vrije Universiteit Amsterdam (VU)[1] set up the project *Island Biogeography meets the Anthropocene* to study how invasive species and land-use changes affect the species communities of the Dutch Caribbean Islands. The project's first field expedition took place in the summer of 2015.

The title of this NWO (Dutch Organization of Scientific Research) and KNAW (Royal Netherlands Academy of Arts and Sciences) funded project, *Island Biogeography meets the Anthropocene*, refers to the integration of human-associated factors into the study of island biogeography, i.e. the research field that focuses on species diversity in geographically isolated areas. Accounting for anthropogenic factors within ecological theories means that the effects of human impact can be predicted more accurately, thereby helping secure a more sustainable future for the species communities of the Dutch Caribbean Islands.

The focus of the VU-team is the herpetofauna clade (reptiles and amphibians) because these species are known to react to human activities. The number of introduced exotic frog, lizard and snake populations has for instance risen exponentially within the Caribbean as a result of expanded trade and travel. An increasing number of Caribbean reptile and amphibian species are also now threatened with extinction as a result of habitat destruction, according to the International Union of the Conservation of Nature (IUCN). The goal of this summer's expedition was threefold: 1) find out which habitats are occupied by exotic and native herpetological species; 2) determine whether exotic and native herpetological species share any habitats; and 3) quantify the impact of human activities on the herpetological species within these habitats.

The chosen study sites were Sint Maarten and Sint Eustatius because the two islands are close to each other and have similar climates but differ greatly in population size, economic connectivity and land use (see pictures). On St. Eustatius, a research group from Utrecht University with a similar interest in invasive species joined the Amsterdam team. This research group studies the spread of invasive plants on St. Eustatius, such as the Mexican creeper plant (*Antigonon leptopus,* a.k.a. Corallita) that currently covers 33% of the island's surface[2]. Members of both universities conducted fieldwork for this study.

A total of 126 plots (areas of 80 m^2) were surveyed within forest, shrub land and urban areas over the course of two months. Different levels of human impact were identified within these different habitat types: plots were either "pristine", with hiking trails showing the most anthropogenic use, or "impacted", that is containing structures such as buildings, paved roads and/or debris and building materials. Urban plots were categorized into irrigated parks and gardens, rubble plots with native pioneer vegetation, and built sites with complete structures within them. In order to objectively quantify differences between plots, specific habi-

Human land use on St. Maarten.
Photo credit: Tobia de Scisciolo

St. Eustatius.
Photo credit: Rotem Zilber

Left to right: Brittany Bernik, Elizabeth Haber, Wendy Jesse, Tobia de Scisciolo, Maarten Eppinga, Jasper Bekema, Rotem Zilber, Jacintha Ellers.
Photo credit: Rotem Zilber

tat characteristics were measured, such as canopy cover, light intensity, temperature, soil moisture and litter depth. All reptiles and amphibians found within 80 cumulative minutes were recorded, along with their precise whereabouts within the plot (for instance, whether they were found on a trunk, rock or in litter, and whether they were perched in the shade or in the sun).

Preliminary study results indicate that the species communities differ dramatically between habitat type and level of human impact. Exotic species are found almost exclusively in human-associated areas, strengthening the hypothesis that exotic species subsist well in anthropogenic areas. However, native species were also found in these areas, implying that they have the ability to adapt to local anthropogenic stressors. This suggests that native and exotic species may interact within shared habitats. Further studies are needed to reveal exactly how native and invasive species interact, and whether this interaction affects their behavior (for example, is there a change in perch behavior or microhabitat as a result of each other's presence?).

For now, the results of this study are a promising first step towards predicting patterns of island invasion as well as extinction risks and their ensuing effects for Caribbean biodiversity.

[1]VU: Jacintha Ellers, Matt Helmus, Jocelyn Behm, Wendy Jesse (PhD. Student)
[2] See article in BioNews 20: *Invasive species in the Dutch Caribbean: foreign foes or alien allies?* By Elizabeth Haber, Jetske Vaas

Don't see your research program on the list or incorrect information? Please e-mail us: research@DCNAnature.org

Research Overview

Below you will find an overview of the research projects for which fieldwork took place on the islands of the Dutch Caribbean.

Category	Subject	Islands	Organization(s): Lead scientist(s)
Amphinomida	Fluorescence on the marine fireworm Hermodice carunculata	BON	CIEE:Enrique Arboleda
Birds	Redbilled-tropicbird nestsuccess and introduced predators (cats, rats)	SAB	IMARES: Dolfi Debrot (PL) SCF: Kai Wulf VHL: Marlous Heemstra, Rick Hinfelaar (student), Rimco Slagter (student)
Birds	Suitability study and reforestation of exclosures facilitating the Yellow-shouldered Amazon Parrots (Amazona barbadensis) on Bonaire.	BON	Echo: Lauren Schmaltz WUR: Quirijn Coolen (student)
Cnidaria	Cubozoans of Bonaire	BON	CIEE: Rita Peachey, Austin Lin
Environmental	Step-by-step plan for environmental advice regarding storm water drainage systems for new construction on Curaçao	CUR	WUR: Klaas Metselaar, Timo Kelder (Msc. student), Caetano Kluijver (Bsc. student)
Environmental	Environmental DNA (eDNA)		CIEE: Rita Peachey, Dr. Enrique Arboleda Indiana University: Stephen Glaholt
Fish	Inventory sharks and rays (SoS project)	AUA	FPNA: Tatiana Becker
Fish	Study on behaviour of sharks using acoustic telemetry	SAB, EUX, SXM	IMARES: Erwin de Winter SCF(SBMU): Dahlia Hassell NFSXM: Tadzio Bervoets STENAPA
Fish	Foraging behavior of Parrotfish (comparison study Bruggemann et all. 1994)	BON	Lewis & Clark College, Portland: Kenneth Clifton, Hannah Rempel (student)
Invasive species	Research into mitigation measures for Sargassum Seaweed	SXM	NFSXM: Tadzio Bervoets Government of St. Maarten
Invasive species	Invasive seagrass-sea turtle interactions (*Part of NWO project: Ecology and conservation of green and hawksbill turtles in the Dutch Caribbean)	BON	STCB: Mabel Nava RuG: Marjolijn Christianen, Moniek Gommers (Msc. student) WUR: Lisa Becking
Invasive species	(1) Roaming grazer impacts on forest regeneration (2) Predation by feral chickens on forest fauna and flora (3) Status of the Giant African Landsnail on Statia and prospects for its control or eradication.	EUX	IMARES: Dolfi Debrot STENPA: Hannah Madden VHL: Jelmer van Belle, Lara Uphoff (student) and Friso Dalm (student) LVV: Anthony Reid
Invasive species	Lionfish ecology	CUR	DC: Amelia Ritger CARMABI
Insects	Baseline study of mosquito populations of Ramsar area Lac Bay.	BON	WUR: Dolfi Debrot VHL: Arjen Strijkstra, Marieke Verweij, Simon de Groot (student) STINAPA: Caren Eckrich and Sabine Engel
Mammals	Spatial and temporal distribution of whales (acoustic loggers Saba Bank)	SAB	IMARES: Dick de Haan Min. EZ: Paul Hoetjes SCF, NFSXM, CNSI
Plants	Germination of seeds of indigenous trees of Curaçao	CUR	CARMABI: John de Freitas
Pants	Testing effective ways to grow native plants	BON	Echo: Daniel Fishburn, Nathan Schmaltz
Plants	Groasis Study: testing the effectiveness of Groasis boxes on pioneer plant species	BON	BU: Daniel Fishburn, Echo
Reptiles	Sea turtle conservation in spite of climate change (*Part of NWO project: Ecology and conservation of green and hawksbill turtles in the Dutch Caribbean)	BON	STCB: Mabel Nava RuG: Marjolijn Christianen, Sandra Striegel (Msc. student) WUR: Lisa Becking
Sponges	Coral excavating sponges	EUX	Dr Steven van Heuven (NIOZ-PostDoc), Alice Webb (NIOZ-PhD), Paul Peters (NIOZ master Student of the University of Utrecht); Didier de Bakker (PhD student)
Zooplankton	Zooplankton Responde to UV light	BON	CIEE:Rita Peachey, Sara Buckley, Austin Lin

News Snippet: First sighting of a pied water tyrant within the Kingdom of the Netherlands

By Binkie van Es

Many kinds of rare birds visit the Dutch Caribbean Islands, such as the masked booby (*Sula dactylatra*) and comb duck (*Sarkidiornis melanotos*). Identifying these uncommon migrants is only possible thanks to the knowledge and skills of our islands' birders. Peter-Paul Schets, a regular visitor to Bonaire and experienced birder, recently highlighted the importance of having these skilled birdwatchers on our islands.

On January 8th and 10th 2016, Peter-Paul Schets observed a pied water tyrant (*Fluvicola pica*) at Bonaire's sewage treatment plant. He was able to confirm this sighting by taking photographs of the bird. This marks the first official record of the pied water tyrant within the ABC Islands and thus the entire Kingdom of the Netherlands. This species of flycatcher is known to breed in tropical South America and Trinidad.

This is not Peter-Paul's first birding discovery. Previously, he recorded the first sighting of a juvenile lesser black-backed gull (*Larus fuscus*). While this species of gull is not uncommon in the region, it had until then never been officially recorded on Bonaire.

Fist sighting of a pied water tyrant on Bonaire.
Photo credit: Peter-Paul Schets

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Long Term Projects

Category	Subject	Island	Organization(s): Lead scientist(s)
Coral Reef Ecosystems	Modified Atlantic and Gulf Rapid Reef Assessment (AGRRA) Program	BON	STINAPA: Robert Steneck; Suzanne Arnold
Coral Reef Ecosystems	Deep Reef Observation Project (DROP) (ARMS: Autonomous Reef Monitoring Structures)	CUR	Smithsonian: Carole Baldwin
Coral Reef Ecosystems	Environmental factors driving recruitment success in Caribbean corals	CUR	UvA: Valerie Chamberland (PhD Student) CARMABI SECORE Foundation
Coral Reef Ecosystems	Development of restoration methods for threatened Caribbean coral species	BON, CUR, SAB	CRF Bonaire: Augusto Montbrun, Francesca Virdis SECORE Project CARMABI: Mark Vermeij UvA: Valerie Chamberland (PhD student) SCF, Sea Saba, Samford University: Jennifer Rahn
Coral Reef Ecosystems	Dissolved Organic Matter released by macroalgae as a possible food source of bioeroding sponges	BON, CUR	NIOZ: Benjamin Müller (PhD student), Fleur van Duyl CARMABI FORCE Project
Coral Reef Ecosystems	Bioersion of reefs by coral-excavating sponges	BON,CUR, SAB, EUX	NIOZ: Fleur van Duyl IMARES: Erik Meesters, Didier de Bakker (PhD student)
Coral Reef Ecosystems	Developing a plan to manage the waters around Curaçao sustainably, profitably, and enjoyably for this and future generations	CUR	Waitt Institute (Blue Halo Curaçao): Ayana Elizabeth Johnson
Database	Dutch Caribbean Species Catalog: Taxonomic knowledge system Dutch Caribbean	AUA, BON, CUR, SAB, EUX, SXM	Naturalis: Sander Pieterse & Berry van der Hoorn
Ecosystem services	Quantification of ecosystem services provided by marine protected areas in the Caribbean with a view to their payment (Project CARIPES)	EUX	IMARES: Erik Meesters Gem City Consulting: Steve Piontek Nova Blue Environment: Jean-Philippe Maréchal
Environmental	Zero nutrient discharge of domestic waste (water) nutrients and total reuse of nutrients in agriculture and aquaculture in Caribbean Islands	EUX	WUR: Grietje Zeeman, Marc Spiller
Environmental	Sustainable ecosystem management and use by marine communities in two exemplary regions	BON, EUX	WUR: Linde van Bets (PhD student); Arthur Mol, Jan van Tatenhove; Machiel Lamers IMARES: Han Lindeboom
Environmental	Effects of dispersants on the fate of oil in realistic conditions	EUX	WUR: Tinka Murk, Marieke Zeinstra-Helfrich (PhD student)
Environmental	Ecotoxicological aspects of rational application of chemicals in response to oil spills to reduce environmental damage	EUX	WUR: Tinka Murk, Justine van Eenennaam (PhD student)
Environmental	Development of an area specific net environmental and economic benefit analysis (NEEBA) to support oil spill mitigation decisions; with St. Eustatius as example	EUX	WUR: Tinka Murk, Sophie Vonk (PhD student)
Fish	Status of shark and fish communities in the Dutch Caribbean	BON, CUR, SAB, EUX, SXM	IMARES: Martin de Graaf
Interstitial biodiversity	Moleculair biodiversity analysis of marine and terrestrial communities by metabarcoding	EUX	Naturalis: Arjen speksnijder ANEMOON: Niels Schrieken
Invasive species	Combatting the economic and ecological impacts of overgrazing on inhabited islands	BON	UsA: Michaela Roberts (PhD student)
Mangrove ecosystems	Magrove restoration Lac Bay, Bonaire	BON	STINAPA: Sabine Engel IMARES: Dolfi Debrot DROB
Molluscs	Population dynamics and role in the food chain of the Queen Conch Lobatus gigas in the Dutch Caribbean Territories	EUX, SAB	WUR: Aad Smaal, Leo Nagelkerke IMARES: Martin de Graaf (Imares) Erik Boman (PhD student) SCF (SBMU): Dahlia Hassell
Public Health	DNA waterscan: Monitoring disease vectors in the Caribbean (mosquitoes and midges)	EUX	Naturalis: Kevin Beentjes ECPHF: Teresa Leslie
Sustainability	Sustainable development Dutch Caribbean (TripleP@Sea Program)	EUX	IMARES: Diana Slijkerman Alterra: Rene Henkens
Terrestrial biodiversity	Baseline assessment and DNA barcoding of specimens	EUX	Naturalis: Michael Stech, Berry van der Hoorn STENAPA: Hannah Madden
Terrestrial biodiversity	Testing surrogates to establish conservation priorities	EUX	Naturalis: Jeremy Miller STENAPA: Hannah Madden

Don't see your research program on the list or incorrect information? Please e-mail us: research@DCNAnature.org

NWO Projects in the Dutch Caribbean			
Coral Reef Ecosystems	Caribbean coral reef ecosystems: interactions of anthropogenic ocean acidification and eutrophication with bioerosion by coral excavating sponges	BON, SAB, EUX	NIOZ: Fleur van Duyl
Environmental	Caribbean island biogeography meets the anthropocene	EUX, SXM (Planned for other islands)	VU: Jacintha Ellers, Matt Helmus, Wendy Jesse (PhD. Student)
Geosciences	Stability of Caribbean coastal ecosystems under future extreme sea level changes (SCENES)	BON, EUX, SXM	UU: Henk Dijkstra, NIOZ: Peter Herman, Rebecca James (PhD student) TU Delft: Julie Pietrzak
Geomorphological	4D crust-mantle modelling of the eastern Caribbean region: toward coupling deep driving processes to surface evolution	EUX	UU: Wim Spakman
Invasive species	Exotic plant species in the Caribbean: foreign foes or alien allies? (1) Socio-economic impacts of invasive plant species (2) Ecological impacts of invasive plant species-Utrecht University	BON, SAB, EUX	(1) UU: Jetske Vaas (PhD student), Peter Driessen, Frank van Laerhoven and Mendel Giezen (2) UU: Elizabeth Haber (PhD student), Martin Wassen, Max Rietkerk,Maarten Eppinga.
Reptiles	Ecology and conservation of green and hawksbill turtles in the Dutch Caribbean	BON, CUR, (Planned for other islands)	RuG: Per Palsbøll, Marjolijn Christianen, Jurgen van der Zee (PhD student) WUR: Lisa Becking STCB: Mabel Nava CARMABI

BO-projects in the Dutch Caribbean			
DCBD	BO-11-019.02-002 - Expansion knowledge system Dutch Caribbean	AUA, BON, CUR, SAB, EUX, SXM	Alterra: Peter Verweij
Fish	BO-11-019.02-055 Fisheries inventory (EEZ Curaçao)	CUR	IMARES: Martin de Graaf
Invasive species	BO-11-019.02-045 -Multifunctional approach harmful for harmful exotic species Caribbean Netherlands	BON, SAB, EUX	IMARES: Dolfi Debrot
Marine biodiversity	BO-11-019.02-008 – Saba Bank research programme 2011-2016	SAB	IMARES: Erik Meesters
Natural resource use	BO-11-019.02-049 – Saba Bank – Fisheries	SAB	IMARES: Martin de Graaf
Natural resource use	BO-11-019.02-050 – World Heritage nomination Bonaire National Marine Park	BON	IMARES: Ingrid van Beek

Don't see your monitoring program on the list or incorrect information? Please e-mail us: research@DCNAnature.org

If you have research or monitoring data, the DCNA secretariat can help you to get it housed in the Dutch Caribbean Biodiversity Database (DCBD). This database is a central online resource with all biodiversity and conservation related information for the Dutch Caribbean.

Monitoring Overview

Below you will find an overview of the monitoring work that is currently running in the Dutch Caribbean. Monitoring work for which fieldwork took place in this month is highlighted.

Category	Subject	Islands	Organization(s): Lead scientist(s)
Birds	Flamingo Abundance	BON	DROB: Frank van Slobbe Cargill STINAPA: Paulo Bertuol
Birds	Monitoring vulnerable parrot nests (remote camera sensing work)	BON	Echo: Nathan Schmaltz
Birds	Yellow-shouldered Amazon parrot roost counts	BON	Echo: Sam Williams DROB: Frank van Slobbe
Birds	Band camera trial (identification of Yellow-shouldered Amazon Parrots)	BON	Echo: Daniel Fishburn
Birds	Bird Monitoring (Caribbean Waterbird Census)	AUA BON	FPNA DLVV: Facundo Franken STINAPA: Paulo Bertuol
Birds	Tern monitoring(artificial nesting islands)	BON	STINAPA: Paulo Bertuol Cargill DROB IMARES: Dolfi Debrot
Birds	Terrestrial Bird Monitoring	BON EUX	Echo: Nathan Schmaltz, Daniel Fishburn STENAPA: Hannah Madden
Birds	Terrestrial Bird Monitoring Program for Bonaire	BON	STINAPA: Fernando Simal
Birds	Nesting Sea Birds	BON	STINAPA: Paulo Bertuol
Birds	Bird monitroing	SAB EUX, SXM	EPIC: Adam Brown
Birds	Red-billed Tropicbird monitoring	SAB EUX	STENAPA: Hannah Madden SCF: Kai Wulf IMARES: Dolfi Debrot
Birds	Population assessment of the Bridled Quail-dove	EUX	STENAPA: Hannah Madden
Coral reef ecosystems	Coral Bleaching Monitoring	SXM	NFSXM: Tadzio Bervoets
Coral reef ecostems	Global Coral Reef Monitoring Network	SAB EUX	IMARES: Martin de Graaf SCF (SBMU): Dahlia Hassell Gem City Consulting: Steve Piontek STENAPA CNSI
Corals reef ecosystems	Staghorn coral field monitoring survey	EUX	STENAPA: Jessica Berkel
Coral reef ecosystems	Monitoring and research of the longest coral reef time-series in the world (since 1973)	BON CUR	IMARES: Erik Meesters, Didier de Bakker (PhD student) NIOZ: Fleur van Duyl, Rolf Bak
Ecosystems	Invasive seagrass monitoring	BON EUX	STINAPA: Sabine Engel Gem City Consulting: Steve Piontek
Ecosystems	Seagrass monitoring	SXM	NFSXM: Tadzio Bervoets
Ecosystems	Mangrove monitoring	SXM	NFSXM: Tadzio Bervoets
Ecosystems	Seagrass/conch/mangrove, Lac Bay	BON	STINAPA: Sabine Engel
Environmental	Water quality testing	SXM	NFSXM: Tadzio Bervoets EPIC: Natalia Collier

Fish	Shark monitoring: -Shark sightings - Shark Abundance, distribution and movements (tagging)	SXM	IMARES: Martin de Graaf NFSXM: Tadzio Bervoets
Fish	Spawning monitoring: Red hind surveys on Moon-fish Bank	SAB	SCF (SBMU): Dahlia Hassell IMARES: Martin de Graaf
Geomorphology	Beach litter survey and beach profile survey	SAB EUX	IMARES: Martin de Graaf Samford University: Jennifer Rahn
Geomorphology	Monitoring: -Cobble Beach -Wells Bay Underwater Beach Profile	SAB	Samford University: Jennifer Rahn
Insects	Bee tracking	BON	Echo: Nathan Schmaltz BU: Daniel Fishburn
Insects	Butterfly monitoring	EUX	STENAPA: Hannah Madden
Invasive species	Goat and/or donkey removal: -Washington Slagbaai National Park - Lac Bay area (exclusion plots) - Quill National Park (exclusion plots)	BON EUX	STINAPA: Evo Cicilia IMARES: Dolfi Debrot DROB STENAPA: Hannah Madden
Invasive species	Lionfish abundance and control	BON CUR SXM SAB EUX	STINAPA: Ramon de Leon, Paulo Bertuol (50 meter traps) CARMABI: Mark Vermeij NFSXM: Tadzio Bervoets SCF (SBMU): Dahlia Hassell STENAPA: Jessica Berkel
Invasive species	Monkey Monitoring: abundance and distribution	SXM	NFSXM: Tadzio Bervoets
Invasive species	Feral pig population assesment (trapping)	BON	Echo: Nathan Schmaltz, Sam Williams UsA: Michaela Roberts
Mammals	Bat monitoring	AUA BON	FPNA WildConscience: Fernando Simal, Linda Garcia
Mammals	Dolphin monitoring (since 1999)	BON	Ron Sewell
Molluscs	Conch (Strombus gigas) on St. Eustatius, Saba Bank, Anguilla	SAB EUX	IMARES: Martin de Graaf, Erik Boman (PhD student) SCF (SBMU): Dahlia Hassell
Natural resource use	Fishery monitoring (including marine mammal sightings and use of escape vents to reduce by-catch)	SAB EUX	IMARES: Martin de Graaf SCF (SBMU): Dahlia Hassell Gem City Consulting: Steve Piontek
Plants	Reforestation Klein Bonaire	BON	STINAPA: Elsmarie Beukenboom
Plants	Phenology study of columnar cacti and native tree species on Bonaire	BON	STINAPA: Paulo Bertuol
Plants	Phenology of bats in cacti landscapes of Aruba	AUA	WildConscience: Linda Garcia, FPNA
Plants	Monitoring the effectiveness of using an electric fence as an herbivore-exclusion zone	BON	Echo: Nathan Schmaltz
Reptiles	Lesser Antillean Iguana: Monitoring population density	EUX	RAVON: Bart Kluskens STENAPA: Hannah Madden
Reptiles	Boa and Cascabel Monitoring	AUA	FPNA, Toledo Zoological Society: Andrew Odum
Reptiles	Red bellied Racer snake population survey	EUX	Gem City Consulting: Steve Piontek
Reptiles	Sea turtle monitoring: -Satellite tracking -Nest monitoring -In water surveys (BON, CUR, SXM) -Fibropapillomatosis presence (BON)	AUA, BON, CUR, SAB, EUX, SXM	TurtugAruba Foundation STCB: Mabel Nava CARMABI (STCC): Sabine Berendse STENAPA: Jessica Berkel SCF:Kai Wulf NFSXM: Tadzio Bervoets

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Reports and Publications overview

Below you will find an overview of the reports and publications on biodiversity related subjects in the Dutch Caribbean that have recently been published.

Anderson, G.A., S. Rocliffe, N.R. Haddaway, A.M. Dunn (2015)
The role of Tourism and Recreation in the Spread of Non-native Species: A systematic Review and Meta-Analysis, PLos ONE 10(10): e0140833. doi:10.1371/journal.pone.0140833

Chamberland, V.F., D. Petersen, K.R.W. Latijnhouwers, S. Snowden, B. Mueller, M.J.A. Vermeij (2016)
Four-year-old Caribbean Acropora colonies reared from field-collected gametes are sexually mature. Bulletin of Marine Science 92(2)
DOI: 10.5343/bms.2015.1074

Gillett, C.P.D.T, M.P.T. Gillett (2015)
The Dynastinae of the island of Saba, Dutch Caribbean (Coleoptera: Scarabaeidae), Insecta Mundi 0433, pp. 1-9

Graaf, M. de, S. Piontek, D.C.M. Miller, T. Brunel, L.A.J. Nagelkerke (2015)
Status and trends of St. Eustatius coral reef ecosystem and fisheries: 2015 report card, IMARES Report C167/15

Hoeksema, B.W., P. Bongaerts, C.C. Baldwin (2016)
High coral cover at lower mesophotic depths: a dense Agaricia community at the leeward side of Curaçao, Dutch Caribbean, Caribbean Coral Reefs, Marine Biodiversity, pp 1-4 DOI:10.1007/s12526-015-0431-8

Ivanenko, V.N., M.A. Nikitin, B.W. Hoeksema (2015)
Multiple purple spots in the Caribbean sea fan Gorgonia ventalina caused by parasitic copepods at St. Eustatius, Dutch Caribbean, Caribbean Coral Reefs, Marine Biodiversity, pp 1-2, DOI 10.1007/s12526-015-0428-3

Kluskens, B., T. van den Burg (2015)
Bedreigde Nederlandse leguaansoort op de kaart gezet, RAVON (59), jaargang 17, nummer 4: pp.79-81

Meesters, E.H.W.G., B. Boomstra, N.Hurtado-Lopez, A. Montbrun, F. Virdis (2015)
Coral restoration Bonaire. An evaluation of growth, regeneration and survival. IMARES Report C152/15

Montano, S, H. Hoeksema (2016)
First record from the Atlantic: a Zanclea-scleractinian association at St. Eustatius, Dutch Caribbean, Caribbean Coral Reefs, Marine Biodiversity, pp.1-2 , DOI 10.1007/s12526-015-0432-7

Internship Reports

Larash C. (MPs. Student), STCB, Boneiru Duradero (2015)
Bonaire, Dutch Caribbean: A comparative Analysis of Policy Instruments and Implementation Methods for Reduction in Single-Use Plastic Bag Consumption

Oosterhuis, H.J. (Msc. student SLM WUR), K. Metselaar (WUR), M. Holmgren (WUR), E. ter Horst (FPNA), T. Becker (FPNA) (2016)
Landscape-ecological survey of Arikok National Park, Aruba, Restoring vegetation of a dry tropical island

Wagensveld, T. van (Msc. student WUR), M. Naguib (WUR), H. Madden (STENAPA) (2015)
The Biology and Distribution of *Iguana delicatissima* on St. Eustatius

List of Acronyms

AUA	Aruba
BON	Bonaire
CUR	Curaçao
SAB	Saba
EUX	St. Eustatius
SXM	St. Maarten
Alterra	Research Institute for our green living environment, the Netherlands
ANEMOON	Analyse Educatie en Marien Oecologisch Onderzoek
ASDF	Aruba Sustainable Development Foundation
BO project	Policy Supporting Research project
BU	Bangor University, United Kingdom
CARMABI	Caribbean Research and Management of Biodiversity Foundation
CIEE	Council of International Educational Exchange, Bonaire
CRF	Coral Reef Foundation
DCNA	Dutch Caribbean Nature Alliance
DCBD	Dutch Caribbean Biodiversity Database
DROB	Directorate of Spatial Planning and Development, Bonaire
DLVV (Santa Rosa)	Department of Agriculture, Livestock, Fishery and Farmers market (Santa Rosa), Aruba
ECPHF	Eastern Caribbean Public Health Foundation
EPIC	Environmental Protection in the Caribbean
FPNA	Fundacion Parke Nacional Arikok, Aruba
IMARES	Institute for Marine Resources and Ecosystem Studies, the Netherlands
LVV	Department of Agriculture, Animal Husbandry & Fisheries, St. Eustatius
NFSXM	Nature Foundation St. Maarten
Naturalis	Naturalis Biodiversity Center, Leiden, The Netherlands
NIOZ	Royal Institute for Sea Research, the Netherlands
NWO	Netherlands Organisation for Scientific Research
RAVON	Reptielen Amfibieën Vissen Onderzoek Nederland
RuG	University of Groningen, the Netherlands
SBMU	Saba Bank Management Unit
SCF	Saba Conservation Foundation
Smithsonian	Smithsonian's National Museum of Natural History
STCB	Sea Turtle Conservation Bonaire
STCC	Sea Turtle Conservation Curacao
STENAPA	St. Eustatius National Parks Foundation
STINAPA	National Parks Foundation Bonaire
TUD	Delft University of Technology, the Netherlands
UsA	University of St. Andrews, Scotland
UU	University of Utrecht, the Netherlands
UvA	University of Amsterdam, the Netherlands
VHL	University of Applied Sciences VHL, the Netherlands
VU	VU University Amsterdam, the Netherlands
Wildconscience	Wildlife Conservation, Science and Education
WNF	World Wide Fund for Nature
WUR	Wageningen University and Research Centre, the Netherlands

12th meeting of the Scientific Committee of the Inter- American Sea Turtle Convention (IAC)

October 27-29, 2015, Viña del Mar, Chile - *By Paul Hoetjes*

The IAC Scientific Committee in Viña del Mar, Chile
Photo credit: IAC

The Scientific Committee (SC) of the IAC meets annually to discuss the annual reports of the member countries, and threats and impacts on sea turtles on both sides of the American continent. The members consist of scientific experts on sea turtles delegated by the member countries. The Caribbean Netherlands has delegated an expert on Caribbean sea turtles, Dr. Julia Horrocks of the University of the West Indies in Barbados. The SC met in Chile this time. Paul Hoetjes participated as Chair of the Consultative Committee, the other, more policy oriented advisory body of the IAC.

The Scientific Committee has several working groups that focus on specific issue. The fisheries WG looks at interactions between sea turtles and fisheries. They are currently looking at an ongoing survey of 'non-crustacean' trawling fisheries in member countries to assess its impact on sea turtles.

A new Loggerhead turtle WG was formed in response to a Loggerhead resolution passed last year by the Conference of Parties. They will work on a report on Loggerhead populations. The Eastern Pacific Leatherback WG is looking at actions to address the alarming decrease in nesting seen in Eastern Pacific Leatherback turtles, they are working with the Fisheries WG as well , and outside the Scientific committee in a broader task force with the Countries on the West Coast of the Americas, from the USA to Chile. Interactions with artisanal fisheries, the suspected main cause of the decrease, is currently being assessed, and training programs to minimize interactions are taking place. Main outcomes of the meeting:

- The reports of the three countries that have claimed an exception for traditional subsistence harvest of sea turtles, Panama, Guatemala and Costa Rica, were reviewed. Recommendations were made to ensure the sustainability of this use.
- The meeting discussed and approved a Technical Document, *"Mitigation strategies to reduce the impact of climate change on nesting beaches"* (www.iacseaturtle.org/eng-docs/publicaciones/CIT-CC12-2015-Tec.10_Climate%20change%20parametres_WEB.pdf) drafted by the Climate Change WG, led by Dr. Julia Horrocks.
- Dr. Horrocks will coordinate a WG with the USA to develop a format to better collect information on climate change parameters on index beaches, to be included in the annual report format so countries can more easily report on their efforts to implement the Resolution on Adaptation of Sea Turtle Habitat to Climate Change (see resolution here: www.iacseaturtle.org/eng-docs/resolucionesCOP4CIT/CIT-COP4-2009-R5ENG_Final.pdf).
- Another technical document approved at the meeting was titled "*Marine Debris Impacts on Sea Turtles*" (www.iacseaturtle.org/eng-docs/publicaciones/CIT-CC12-2015-Tec.11_Marine%20Debris%20and%20Sea%20Turtles_WEB.pdf). The Stranding WG did a preliminary analysis of a questionnaire sent to the member countries they will prepare a technical document on sea turtle strandings for the next meeting.

The full report of the 12th SC meeting is available here: www.iacseaturtle.org/eng-docs/comite-cientifico/12reunion/REPORT_SC12_DEC_18_2015__ENG_Final_WEB.pdf

The Dutch delegation at the 12th meeting of the Scientific Committee of the IAC. Julia Horrocks, one of the top Caribbean sea turtle expert of the University of the West Indies on Barbados and delegated by the Kingdom of the Netherlands as its scientific expert to the IAC, with Paul Hoetjes, current Chairman of the Consultative Committee of the IAC.
Photo credit: IAC

More events to add to this calendar? Please e-mail us: research@DCNAnature.org

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Calendar

An overview of nature conservation and management related events of this month and the coming months.

January

26	Gala	Dutch Postcode Lottery Charity Gala (Goed Geld Gala) Amsterdam, the Netherlands
30	Fieldwork	Yellow-shouldered Amazon yearly parrot roost counts (ECHO, DROB)

February

1-5	Conference	Second Mares Conference: Marine Ecosystems Health and Conservation, Olhão, Portugal
2	Event	World Wetlands Day
12-13	Meeting	Sharks AC1 - 1st Sharks MOU Advisory Committee Meeting San José, Costa Rica
15-19	Meeting	2nd Meeting of Signatories (MOS2) to the Memorandum of Understanding on the Conservation of Migratory Sharks San Jose, Costa Rica.
15-19	Course	Summer School "Small Island Natural Resource Development" organised by CNSI, St. Eustatius
18	Meeting	NWO call Caribbean. Naturalis, Leiden, the Netherlands.
23	Conference	European Conference of Tropical Ecology, Göttingen, Germany
25-28	Symposium	5th International Tropical Marine Ecosystem Management Symposium, Phillippines
29-4 March	Symposium	36th Annual Symposium on Sea Turtles Biology and Conservation, Lima, Peru

March

3	Event	World Wildlife day
6-11	Conference	14th International Coastal Symposium, Sydney, Australia
10-12	Conference	5th International Conference on Biodiversity, Madrid, Spain
22-24	Workshop	1st Caribaean Initiative Research & Conservation Workshop, Fort-de-France, Martinique

April

5-7	Meeting	DCNA Board Meeting, Sint Maarten
5-7	Conference	Boosting biodiversity research cooperation - A NetBiome roadmap for European (sub) tropical Overseas, Brussels, Belgium
17-23	Workshop	Biophysical monitoring and socio-economic monitoring of coral reefs based on the regional guidelines developed by the GCRMN- Caribbean, Discovery Bay Marine Lab of the University of the West Indies, Jamaica (GCRMN, SPAW-RAC)
19	Meeting	Consultative Committee of Experts of the Inter-American Sea Turtle Convention (IAC), Videoconference from Washington DC

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